

225, 6 1959

Kehrli



FIG.1

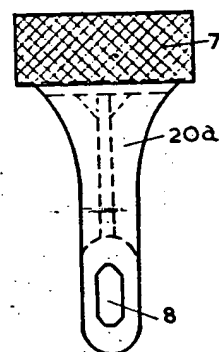


FIG. 2

FIG. 3

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COMMONWEALTH OF AUSTRALIA

No. 34,093/57

PATENT SPECIFICATION

Complete Specification Lodged 23rd October, 1958
Application Lodged No. 34093/57 24th December, 1957.
Applicant (Actual Inventor) Rudolf Kehrli.
Complete Specification Published 23rd April, 1959.
Complete Specification Accepted 23rd November, 1959.

Classification: 72.1; 80.4
International Classification: B 25 b

Drawing attached.

COMPLETE SPECIFICATION

"Quick-acting vice."

The following statement is a full description of this invention, including the best method of performing it known to me:—

This invention relates to tools for holding work pieces and more particularly to such tools adapted to be attached to a work bench or other fixture and capable of being rapidly brought into gripping relationship with the work piece or article to be held.

Tools of this type hitherto known, have been restricted to vices of conventional pattern wherein the gripping pressure is applied by a capstan-actuated screw with which a split nut or half nut can be brought into engagement by means of a lever or other device.

Common disadvantages associated with these known tools concern the shallow throat that normally exists below the gripping jaws, and the limited size of the work piece that can be accommodated in the gripping jaws.

The present invention has for its object the provision of a quick-acting vice by means of which the said disadvantages are substantially removed.

Another object of the invention is to provide a quick-acting vice of simple construction, and low cost of production.

In a general form the invention is a quick-acting vice comprising a fixed jaw member having a passage therethrough adapted to slidably and non-rotatably receive a wedging member, a moving jaw member slidably and non-rotatably mounted adjacent one end of the wedging member, an actuating arm having a cam face in displacing relation to the moving jaw member the said arm being rotatably secured near the end of the wedging member, and resilient means urging the moving jaw member toward the cam face.

A preferred construction of the invention

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will now be described with reference to the accompanying drawings, wherein:—

Fig. 1 is a side elevation of a quick acting vice in accordance with the invention.

Fig. 2 is a side elevation of a fixed jaw member of the invention adapted for use as a bench vice.

Fig. 3 is a front elevation of the jaw member of Fig. 2.

Fig. 4 is a view taken at 4—4 of Fig. 1 showing a preferred rectangular wedging bar cross section.

For simplicity in description the end of the vice having the actuating arm will be called the front end and the remote end, the rear end.

Accordingly, in the practice of this invention use is made of a fixed jaw member comprising a shaped standard 20 or a pendant bench-fitting 20a each having plate means 5 for rigidly fixing the member to a foundation by fasteners such as screws, bolts and nuts and the like.

The upper end of either member 20 or 20a forms a jaw 6, to the front face of which a gripping surface 7 is provided.

The standard 20 is provided at a position spaced between the plate 5 and the jaw 6 with a passage 8 therethrough, the said passage having its axis from front to rear and being, for example, a substantially upright rectangle in cross section.

A similar passage is provided in the pendant end of the bench fitting 20a.

Slidable in the said passage is a wedging member 9 such as a bar on edge which can be of any reasonable length and also has a substantially rectangular cross-section.

The wedging member 9 preferably has each arris removed to provide bevels 19 as shown by Fig. 4, the passages in the respective jaw members for the wedging member, being correspondingly shaped.

Adjacent to the front end of the wedging member 9 a moving jaw member 10 is slidably mounted thereon with its jaw 11 at the upper end faced with a gripping surface opposite to and in coacting relationship with

the gripping surface 7 of the fixed jaw member 20.

The gripping surfaces 7 and 12 affixed to each jaw member respectively, may be fixed or attachable shoes or plates of knurled steel, soft metal, or of wood which may be faced with sheet rubber, or other material, or have contoured faces for shaped work pieces.

The wedging member 9 has a moving jaw member actuating arm 13 rotatably mounted near its front end. This actuating arm 13 is in the form of a lever having an enlarged end 14 which is bifurcated as a clevis to slidably receive the end of the wedging member 9 on which it is rotatably retained by a transverse hinge pin 15. The end surfaces 16 of the bifurcated legs of the said arm 13 are cam faced at varying radii from the arm fulcrum point 14 so that with the moving jaw member 10 and the cam face legs of the arm 13, in abutment, partial rotation of the arm 13 in the appropriate direction will slidably displace the moving jaw member 10 on the wedging member or bar 9.

At the rear of the moving jaw member 10 and spaced therefrom is a stop plate 17 secured to the wedging member 9 to form an abutment for one end of a compression spring 18, the other end of which abuts to the rear face of the moving jaw member 10 where it is mounted on the wedging member. This compression spring 18 provides the bias to urge the moving jaw member 10 towards the cam face 16.

It may now be seen that with this invention constructed as described, the wedging member 9 and associated moving jaw member 10 can be rapidly slid through the fixed jaw member to hold a work piece between the gripping faces of the respective jaws, whereupon partial rotation of the actuating arm 13 in the appropriate direction will tend to further advance the moving jaw member 13 towards the work piece. This tendency reacts with the work piece to slightly tilt the wedging member 9 in the fixed jaw member thereby locking the jaw members on the work piece. The work piece is released by reverse partial rotation of the actuating arm.

The construction described omits details of components such as anti-wear members

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which may be provided between rubbing surfaces as such devices are well known to those skilled in the art.

The claims defining the invention are as follows:—

1. A quick-acting vice comprising a fixed jaw member having a passage therethrough adapted to slidably and non-rotatively receive a wedging member, a moving jaw member slidably and non-rotatably mounted adjacent one end of the wedging member, an actuating arm having a cam face in displacing relation to the moving jaw member, the said arm being rotatably secured near the end of the wedging member, and resilient means urging the moving jaw member toward the cam face. (24th December, 1957.)

2. A quick-acting vice as in claim 1 wherein the fixed jaw member is adapted to be mounted as a standard on a fixture. (24th December, 1957.)

3. A quick-acting vice as in claim 1 wherein the fixed jaw member is adapted to be mounted as a pendant fitting from a fixture. (24th December, 1957.)

4. A quick-acting vice as in claim 1 wherein the wedging member is substantially rectangular in cross section. (24th December, 1957.)

5. A quick-acting vice as in claim 4 where-

in the wedging member has each longitudinal arris removed to provide bevelled wedging edges. (24th December, 1957.)

6. A quick-acting vice as in any preceding claim wherein a helical compression spring disposed between the moving jaw member and a stop plate secured to the wedging member constitutes the resilient means. (24th December, 1957.)

7. A quick-acting vice as in claim 1, 2 or 3 wherein the passage in the fixed jaw member has a contour substantially similar to the wedging member cross section. (24th December, 1957.)

8. A quick-acting vice substantially as herein described with reference to Fig. 1 or to Fig. 1 as modified by Figs. 2 and 3 of the accompanying drawing. (24th December, 1957.)

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Patent Attorneys for the Applicant.

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References:

Serial No.	Application No.	Classification
162,471	11,404/52	72.1
—	17,560/34	72.1; 80.4
139,630	22,473/48	72.1; 74.5

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FIG. 4